



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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Inventor: Estes et al. ) Examiner: G. Webb  
Serial No.: 10/027,160 )  
Title: Non-aqueous Washing Apparatus and ... ) Group Unit: 1751  
Atty. Docket No. 9793070-0439 )

*[Handwritten signature]*  
5-8-03

**Appeal Brief**

Appellants submit, in triplicate, Appellants' Brief on Appeal under 37 C.F.R. § 1.192 in support of the Notice of Appeal filed on 24 Jan. 2003. Appellants also petition for an extension of time for one month. The Commissioner is hereby authorized to credit overpayments or to charge any deficiency in a required fee to Deposit Account No. 19-3140.

**I. REAL PARTY IN INTEREST**

The real party in interest is Whirlpool Corp. of Benton Harbor, MI. A copy of the assignment from the inventors was filed in this application based on the assignment of the parent application to Whirlpool Corp.

**II. RELATED APPEALS AND INTERFERENCES**

There are no related appeals and no related interferences.

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**III. STATUS OF CLAIMS**

Initially filed were claims 1 to 20, which were canceled in a preliminary amendment in favor of claims 21 to 39. Based on the Supplemental Response "A" filed on 01 Oct. 2002, the status of the claims is: claims 21 to 78 are pending, of which claims 21, 40, 53, and 66 are independent. But due to a *sua sponte* constructive restriction in the Final Office Action dated 29 Oct. 2002, the Examiner withdrew claims 53 to 78 from consideration.

As reflected in the concurrently filed Amendment “C”, the applicants, in the interest of expediting appeal, accept the withdrawal without prejudice of claims 53 to 78 so that they can be pursued in another application, and by that Amendment, claims 53 to 78 are being canceled from this application.

For the purposes of appeal, the applicants are appealing claims 21 to 52, of which claims 21 and 40 are independent. The claims were rejected in view of Maekawa, Jackson, and Tokuyama as anticipating the various claims.

#### **IV. STATUS OF AMENDMENTS**

Based on the Advisory Action dated 08 Jan. 2003 (Paper No. 11), that Action indicated that the Response “B” to the Final Office Action dated 29 Oct. 2002 (an Amendment After Final) filed on 20 Dec. 2002 would not be entered. Accordingly, the last entered amendment that was acted upon was the Supplemental Response “A” To The First Non-Final Office Action, filed on 01 October 2002. The applicants timely filed a Notice of Appeal to this Board on 24 Jan. 2003. Applicants are submitting concurrently an Amendment “C” that cancels claims 53 to 78 and amends claims 24 and 43 to delete the phrase “ultraviolet light” from the claims. This amendment does not raise any new issues, cancels claims without adding new ones, and serves to narrow the issues for appeal.

#### **V. SUMMARY OF INVENTION**

The invention relates to a “dry” laundering machine, methods, and unique working fluids (Spec. pg. 1, line 5). The machine can be used in the home as opposed to the traditional large-scale dry cleaning operation. Other applications by the applicants covering other aspects of the invention have issued as U.S. Patent Nos. 6,451,066 and 6,045,588, and also include one allowed application. Those patents or applications generally cover machine claims or method claims. On

the other hand, this application relates to the wash liquor that is used in the dry laundering process. Traditional washing liquors include detergents, bleaches and, most importantly, water. In fact, traditional washing machines consume a tremendous amount of water (Spec. pg. 1, line 23). Not all fabrics can be washed in a traditional washing machine because the water infiltrates the fabric fibers, expands, swells, and essentially reduces the life expectancy of the fiber (Spec. pg. 1, line 23). Hence, the clothes become damaged.

The solution to this terrible problem was the advent of the traditional dry cleaning business. Consumers had to travel to the dry cleaners, drop off clothes, pay for dry cleaning, and pick the clothes up. While the dry cleaning process is useful to the consumer, it plays terrible havoc with the environment. Traditional dry cleaning uses halogenated hydrocarbons, such as perchloroethylene (nefariously known as “perc”) (Spec. pg. 2, line 10). Because the use of perc is calamitous, strict environmental regulations exist to control its use and disposition (Spec. pg. 2, line 14). The stricter controls sent many in the dry cleaning industry towards petroleum based solvents (Spec. pg. 2, line 18). These solvents are inflammable and are smog-producers. Accordingly, the use of these solvents in the home is out of the question (Spec. pg. 2, line 21).

The ideal working fluid (IWF) of the current invention has some interesting characteristics. The IWF is defined as one that is “substantially non-reactive” or “substantially inert” when used to describe a component of a wash liquor or washing fluid; and means a non-solvent, non-detersive fluid that under ordinary or normal washing conditions (e.g., at pressures of -1 to 50 atmospheres and temperatures of from about 10 °C to about 45 °C, does not appreciably react with the fibers of the fabric load being cleaned, the stains and soils on the fabric load, or the washing additives combined with the component to form the wash liquor) (Spec. pg. 1, line 9). That is, the IWF cannot be water — it must be non-aqueous — because water is very reactive and appreciably reacts with the fibers. The IWF is also non-detersive,

which means that it is not a “cleansing substance that acts similarly to soap but is made from chemical compounds rather than fats and lye” (see, [www.yourdictionary.com](http://www.yourdictionary.com) for a definition of a detergent). That is, the plain definition of detergent is that the detergent substance performs soap-like cleaning. It is well established that soap-like cleaning occurs because one part of the soap molecule is hydrophilic (water-binding) and the other is hydrophobic (water-repellent). The hydrophilic part allows the hydrophobic fatty acids to come into contact with other hydrophobic substances, such as the dirt on the surface that is being cleaned. When the grime or dirt adheres to the soap’s fatty acids, it becomes encapsulated in droplets of water. Dirt, oil and bacteria are easily scrubbed off and washed away in this suspended state. The IWF has also been defined by various parameters such as density, oil solvency, flash points, etc. (Spec. pg. 4, line 16).

From this, the modality of action of the IWF becomes clear. An IWF ideally does nothing except act as a carrier or vehicle to carry an additive to the clothes so that the additive can work on the clothes (Spec. pg. 4, line 25). Accordingly, an IWF is non-reactive because it does not react appreciably with the clothes and is not detergent because it does not clean in a soap-like fashion. In this application, the additive has been defined to be those substances capable of acting on the fabric (e.g., surfactants, enzymes, bleaches, ozone, deodorizers, stain removers, etc.) (Spec. pg. 5, line 11).

The invention, therefore, relates to a wash liquor combination in which one ingredient is the IWF, defined specifically as “a non-reactive, non-aqueous, non-oleophilic, apolar working fluid,” and another ingredient is a washing additive. In particular, claims 21 and 40 are reproduced now:

21. A wash liquor composition for use in laundering a fabric load comprising:

a) a non-reactive, non-aqueous, non-oleophilic, apolar working fluid, and

- b) at least one washing additive.
40. A wash liquor composition for use in laundering a fabric load comprising:
- a) a non-reactive, non-aqueous, non-oleophilic, apolar working fluid, and
  - b) at least one non-aqueous washing additive.

As is abundantly clear now, the invention of claim 21 is a combination of a well-defined working fluid with a washing additive. Claim 40 is the same well-defined working fluid with a non-aqueous washing additive.

## **VI. ISSUES**

The issues on Appeal are as follows:

1. The independent claims require that the working fluid be non-reactive with the fabrics to be cleaned. The chemicals identified by the Examiner in the Maekawa and Jackson references indicate that severe reactions are required and intended with their respective substrates. Did the Examiner err in rejecting the claims for anticipation when he stated that these severely reactive chemicals correspond to the non-reactive working fluid claimed?
2. The independent claims require a washing additive that is capable of cleaning or assisting in cleaning. The Examiner asserted that the Jackson reference teaches a pitch that corresponds to the claimed additive. The applicants showed that the “pitch” is a thick, sticky, and tarry substance. Did the Examiner err in rejecting the claims in view of Jackson?
3. Claim 40, an independent claim, requires that the washing additive be non-aqueous. The Tokuyama reference teaches that the only other ingredient in his composition is water. Did the Examiner err in rejecting claims 40 et seq. when they call for a non-aqueous additive and Tokuyama teaches water, which by definition is aqueous?

## **VII. GROUPING OF CLAIMS**

All claims do not stand or fall together. On appeal are claims 21 to 52. Claims 22, 23, 28, and 39 stand or fall with claim 21. Claim 27 stands or falls with claim 25. Claims 41, 42, 47, and 51 stand or fall with claim 40. The remaining claims are argued separately.

## **VIII. ARGUMENT**

### **A.1 The Claims**

Claim 24 recites: “wherein the washing additive is selected from the group consisting of surfactants, enzymes, bleaches, ozone, ultraviolet light, hydrophobic solvents, hydrophilic solvents, deodorizers, fragrances, antistatic agents, antistain agents, and mixtures thereof” (emphasis added). Claim 43 states the same thing.

### **A.2 The Rejection**

The Examiner rejected the claims in view of the UV light recitation.

### **A.3 The Argument**

In the interest of expediting appeal of the remaining issues, the applicants waive the argument regarding the propriety of having UV light as an additive in the combination at this point of the application. Accordingly, the UV light limitation is canceled as shown in the concurrently filed Amendment “C”.

### **B.1 The Claims**

Claims 21, 22, 25-38, 40, 41, 44-50.

## B.2 The Rejection

The Examiner rejected the claims as being anticipated by Maekawa (5,133,802).

## B.3 The Argument

With respect to claim 21, the independent claim, it calls for 2 parts: (a) a working fluid and (b) at least one washing additive. Furthermore, the working fluid also has certain expressed attributes: non-reactive, non-aqueous, non-oleophilic, and apolar. Similarly, claim 40 calls for 2 parts: (a) a working fluid with the recited adjectives and (b) a non-aqueous washing additive. As it is axiomatic in anticipation law, the prior art must teach each element of the claimed invention. It is also axiomatic that the burden of proving the existence of each element of the claimed invention in the prior art rests squarely on the Examiner as the preamble to section 102 unequivocally states that the applicants “shall be entitled to a patent unless...” the anticipation can be shown.

The Examiner stated clearly that he considers the washing additive to correspond to the fluorinated pitch (First Office Action, para. 10, Paper No. 4). The applicants defined the washing additive to be that which, *inter alia*, is able to act on the fabric to clean it (see Spec. pg. 5).

Examining the fluorine pitch which the Examiner has said corresponds to the claimed washing additive, his arguments are plainly wrong. The plain meaning of the word “pitch” is a thick, tarry, dark, sticky substance, such as asphalt, tree sap, etc. (see Exhibit 1, [www.yourdictionary.com](http://www.yourdictionary.com)). As identified in the specification, one purpose of the additive is to assist in fabric cleaning. No reasonable construction of the word “pitch” could ever be as a washing additive. It is completely antithetical to have a pitch, a compound that sticks, is tarry, etc., be used as a cleaning/washing additive. But if the term “pitch” is given its plain meaning of

a sticky substance, as the applicants suggest, then this meaning is consistent with the purpose of the Maekawa disclosure, which is to stick to clothes to provide water and oil repellency. For this reason alone, Maekawa '802 cannot anticipate because it lacks the necessary additive.

Not to be undone, however, the Examiner asserts that the Maekawa fluorinated solvent corresponds to the claimed "working fluid" but has failed to show by any sound scientific evidence that the recited fluorinated solvents possess the list of required adjectival properties claimed. No evidence is proffered to show that the fluorinated solvent is non-reactive, non-aqueous, non-oleophilic, and apolar. It is well established that the fact a certain result or characteristic may occur in the art does not establish that it does occur in the art. *In Re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993). Concerns over breadth of the claim is of no relevance to the Patent Office unless the Office can demonstrate that the broad claim is anticipated. *See, e.g., In Re Marzocchi*, 439 F.2d 220, 169 USPQ 367, 369 (C.C.P.A. 1971). The plain burden is on the Examiner to show a prior art working fluid that possesses all the claimed attributes.

Final Office Action paragraph 16 outlines the Examiner's arguments regarding the fluorinated solvent (corresponding to the claimed working fluid). He states:

the fluorinated compounds have already been reacted with a very electronegative compound [sic, atom or ion] such as fluorine, the compounds would inherently be non-reactive. As these compounds don't contain water, they are inherently non-aqueous. As these compounds are perfluoro none of the carbon contain double bonds and would thus be non-oleophilic. As these compounds don't contain charge, they are inherently apolar.

This statement is fraught with errors. First, the applicants have defined the term "non-reactive" to mean, *inter alia*, an appreciable lack of reaction with the fibers of the clothes. The Examiner wants that term to mean that because of its high electronegativity, the compound would not have any chemical reaction capability. Of course that belief is belied by the very purpose of Maekawa because the express purpose of the compound is to provide for chemical reaction with the fibers to create water and oil repellency. Moreover, this coating is specifically



designed to resist being removed from the fabrics (see col. 1, lines 50-56: “A further object of the present invention is to provide a novel water and oil repellant composition excellent in the stain proofing properties and having remarkably improved practical durability of the water and oil repellency, such as abrasion resistance, washing resistance, o [sic, or] dry cleaning resistance.”). This statement alone shows conclusively that Maekawa clearly intends to react with the fabrics, not be non-reactive.

In addition, as the Examiner admits, the high electronegativity creates a polarity, not an apolarity. Plainly, fluorine is a highly electronegative atom and whether it is bonded ionically or covalently, it steals electrons from the shared atom and thus creates a polarity. Accordingly, if it is highly polar then it cannot be substantially apolar.

As to claim 24 (as amended), it defines the washing additive as being selected from the group consisting of surfactants, enzymes, bleaches, ozone, hydrophobic solvents, hydrophilic solvents, deodorizers, fragrances, antistatic agents, antistain agents, and mixtures thereof. The Maekawa pitch is not found in the group recited in claim 24. For this additional reason claim 24 is not anticipated.

As to claim 25, the Examiner has not shown that the additive is one of the items selected from claim 24 (claim 25 depends from claim 24) and that the additive is individually mixed with the working fluid. Because claim 24 states that the additive is a surfactant, enzyme, bleach, ozone, hydrophobic solvent, hydrophilic solvent, fragrance, deodorizer, antistatic agent, antistain agent, or mixture thereof, then one of these must be mixed individually with the working fluid. Because the only compound corresponding to the additive identified by the Examiner is the pitch, then this pitch is clearly not one of the items listed in claim 24. For this additional reason, claim 25 is not anticipated.

As to claim 26, Maekawa fails to teach that any Maekawa mixture is sufficiently stable for a fabric-washing application. Only a ridiculous interpretation of Maekawa's water repellency purpose could be construed as a fabric-washing application. Plainly, claim 26 is not anticipated.

As to claims 29 to 36, none of the parameters claimed are taught in the art. Each claim from 29 to 36 describes a specific parameter. The Examiner has not shown that the Maekawa reference expressly teaches: claim 29's surface tension of less than or equal to 35 dynes/cm<sup>2</sup>; claim 30's oil solvency being greater than water without being oleophilic; claim 31's KB being less than or equal to 30; claim 32's working fluid having a solubility in water of less than about 10%; claim 33's working fluid having a viscosity less than water under normal washing conditions; claim 34's working fluid having a pH from about 6.0 to about 8.0; claim 35's working fluid having a vapor pressure less than the vapor pressure of water; claim 36's working fluid having a flash point of greater than or equal to 145 °C.

As to claim 37, the discussion of Maekawa abundantly shows that the working fluid is not non-reactive -- as the applicants have so defined it -- under washing conditions because the very intent of Maekawa is to provide for intense reactions with the fabrics to confer the repellency. For this additional reason, claim 37 is not anticipated by Maekawa.

As to claim 38, this claim requires that the working fluid be substantially non-swelling to the fabric. On the other hand, the discussion of Maekawa abundantly shows that his fluid is swelling to natural fabrics in the load. For this additional reason, claim 38 is not anticipated by Maekawa.

As to independent claim 40, the applicants restate and incorporate by reference the arguments made above with respect to claim 21. This claim also requires the further limitation of a non-aqueous additive. For each of the reasons previously set forth, claim 40 is not anticipated by Maekawa.

The applicants also restate the arguments made with respect to claims 41 to 52 as related to the above arguments. Claim 43 (as now amended) corresponds to claim 24 (as now amended) and thus the arguments made above are restated here. Claim 44 corresponds to claim 25 and thus the arguments made above are restated here. Claim 45 corresponds to claim 26 and thus the arguments made above are restated here. Claim 48 corresponds to the limitations of claims 29 to 36 and thus the arguments made above are restated here. Claim 49 corresponds to claim 37 and thus the arguments made above are restated here. Claim 50 corresponds to claim 38 and thus the arguments made above are restated here. Claim 52 depends from claim 48, thereby corresponds to claims 29-36 and further includes that the working fluid is hydrofluoroether. As requested above, the Examiner is requested to identify the prior art that teaches the elements of claims 41 to 52 in conjunction with the non-aqueous washing additive of claim 40.

To establish the *prima facie* case of anticipation, the Maekawa reference must disclose the two ingredients of the claimed invention as set forth in the independent claim. It does not disclose either one.

#### C.1 The Claims

Claims 21 to 39.

#### C.2 The Rejection

The Examiner rejected the claims as being anticipated by Jackson (4,004,048).

#### C.3 The Argument

To the extent necessary, the applicants restate the arguments made above as they apply to the Jackson reference. As to claim 21, the term non-reactive has the meaning that it does not

appreciably react with the fibers. As is patently clear, Jackson fully intends to react with the fibers. Not only does Jackson intend to mechanically react with the fibers, it also intends to chemically bind with the fibers (see col. 1, lines 46-55: “fixing and fixation, as the terms are used in this specification are intended to include not only diffusion of the agent into the substrate but also interaction of the agent itself (crosslinking) or the substrate, the interaction commonly being referred to as curing). Moreover, Jackson intends that his process be permanent. Accordingly, the Examiner cannot in one reading of the Jackson reference arbitrarily pick a chemical, say that it is non-reactive, and then fail to acknowledge that in fact it is severely reactive.

Furthermore, the Examiner has yet to demonstrate which chemical compound he considers to correspond to the working fluid and to the additive of claim 21. Specifically, he notes in the First Office Action, para. 15, that “Jackson also teaches perfluoroethers as suitable fluorinated compound [sic, compounds]. This compound thus meets the limitations the application has set forth as a ‘co-solvent’”. Accordingly, this obviously means that he considers the perfluoroether to be a co-solvent. Yet, in the Final Office Action, para. 32, he states that the perfluoroether corresponds to the working fluid, then goes on to explain the same theories of electronegativity, etc. By arguing this strong electronegativity theory, the Examiner admits that the fluorine will steal electrons from shared atoms and thus will create a polarity. If a polarity is created, then it cannot be substantially apolar. For each of these reasons, independent claim 21 is not anticipated by Jackson.

The applicants specifically note that although the Examiner has identified some random fluorocarbons, the Examiner has not shown that they correspond to the formula recited in Claim 23.

In addition, as to claims 21 and 24, given that the applicants have canceled the UV light provision as being an additive, nothing in the Jackson reference teaches an additive as defined in the specification (for claim 21) or expressly set forth in claim 24. For this additional reason, claim 24 is not anticipated by Jackson.

As to claim 26, a requirement of the co-solvent is to provide an ultimate mixture that is sufficiently stable to wash fabrics. Because the undisputed purpose of Jackson is to intimately react and permanently affix to the fabric, nothing can be construed as being suitable for washing.

As for the parameters in claims 29 to 36, no proof has been shown that the prior art compounds disclosed in Jackson provide these parameters. As to claims 29 to 36, none of the parameters claimed are taught in the art. Each claim from 29 to 36 describes a specific parameter. The Examiner has not shown that the Jackson reference expressly teaches: claim 29's surface tension of less than or equal to 35 dynes/cm<sup>2</sup>; claim 30's oil solvency being greater than water without being oleophilic; claim 31's KB being less than or equal to 30; claim 32's working fluid having a solubility in water of less than about 10%; claim 33's working fluid having a viscosity less than water under normal washing conditions; claim 34's working fluid having a pH from about 6.0 to about 8.0; claim 35's working fluid having a vapor pressure less than the vapor pressure of water; claim 36's working fluid having a flash point of greater than or equal to 145 °C.

Jackson fails to anticipate claims 21 to 39.

#### D.1 The Claims

Claims 39 to 52.

## D.2 The Rejection

The Examiner rejected the claims as being anticipated by Tokuyama (JP 405064521 A). The applicants note that Tomoyasu is the inventor and Tokuyama is the assignee.

## D.3 The Argument

The applicants restate any argument made above as necessary. Tokuyama is a “culture solution for orchid and method for cultivation” (see Tokuyama, Title). The purpose is “to obtain a healthy flowering stock capable of shortening the growth period from a seedling of an orchid to a parent plant by immersing a root of the orchid and cultivating in a culture solution composed of a perfluoro compound and water for the orchid.” Tokuyama then describes that a species of the perfluoro compound is perfluorotripentylamine and that water is the second ingredient. That’s all it says.

The applicants are unsure why the Examiner is citing Tokuyama against claim 39, when that claim calls for a specific species of the working fluid to be hydrofluoroether. The Examiner has not shown that the perfluoro compound and perfluorotripentylamine is a hydrofluoroether.

Returning to independent claim 40, it requires that the working fluid is non-reactive. Common sense dictates that the orchid root will uptake the perfluoro compound into the plant. If the perfluoro compound is taken in, it likely is metabolized in the plant’s cellular machinery or interferes with the cell machinery in some fashion (such as a receptor-blocking compound that competitively binds to the active site of a receptor, thereby depriving the normal compound from attaching to the receptor). Otherwise, what would its purpose be? If it is metabolized or otherwise interferes with the plant cells, how that can be considered non-reactive strains credulity. It should be remembered that the applicants defined “non-reactivity” as relating to the ability of the working fluid to provide an inert working environment so that it can act as a carrier

for other wash additives. The working fluid is recovered. Here, that is antithetical to what Tokuyama teaches.

As for independent claim 40, the Examiner identified that the water is the additive. Because claim 40 requires a non-aqueous additive, then water cannot qualify. Given that Tokuyama's entire disclosure details only the perfluoro compound and water, there is nothing else that can qualify as an additive (recalling that the applicants are waiving the UV light additive). It is also important to note that only one perfluoro compound is permissible in Tokuyama. To be very clear, the Tokuyama composition contains only two ingredients: (1) the perfluoro compound and (2) water. There is no room to suggest that there are more than these two ingredients. For these reasons, claim 40 is not anticipated by Tokuyama.

Claim 43 is not anticipated because it calls for a non-aqueous additive and Tokuyama's second ingredient is water. By definition, water cannot be non-aqueous. For this additional reason, claim 43 is not anticipated.

As to claim 45, it is tempting to latch onto the water as also being a co-solvent. But that would mean that the water is serving (for the Examiner's purposes) as the claimed additive and the claimed co-solvent. If the water is considered to be the co-solvent, then the claimed additive is still not taught in the art. For this additional reason, claim 45 is not anticipated.

As to claim 48, a parameter claim, the Examiner has not shown that any of the parameters claimed are found in the prior art description. Notably, claim 48 calls for the working fluid to have: a surface tension of less than or equal to 35 dynes/cm<sup>2</sup>; an oil solvency greater than water without being oleophilic; a KB that is less than or equal to 30; a solubility in water of less than about 10%; a viscosity less than water under normal washing conditions; a pH from about 6.0 to about 8.0; a vapor pressure less than the vapor pressure of water; and a flash point of greater than or equal to 145 °C.

As to claims 49 and 50, they include the limitations regarding washability; characteristics that are totally absent from the prior art. The claims call for substantial non-reactivity under washing conditions and for non-swelling of natural fabrics. No stretch of the imagination can convert the orchid chemical application to washing fabrics. For these additional reasons, claims 49 and 50 are not anticipated.

As to claims 51 and 52, the perfluoro and/or the pentylamine are not perfluoroethers.




## IX. CONCLUSION

The applicants believe that the Examiner has not yet addressed the issue of whether the prior art chemicals are suitable for washing fabrics because the base independent claims each call for non-reactivity. The non-reactivity term is not an intended use, but forms an integral part of the claim body. As such, the prior art is replete with evidence that none of the fluorocarbons identified by the Examiner can meet the non-reactivity requirement. Nor has the Examiner shown that each claim argued separately is anticipated.

Respectfully submitted,

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### Appendix of Claims

\* Claims 24 and 43 are shown marked up as indicated in the accompanying Amendment "C".

21. A wash liquor composition for use in laundering a fabric load comprising:

- a) a non-reactive, non-aqueous, non-oleophilic, apolar working fluid, and
- b) at least one washing additive.

22. The composition of Claim 21 wherein the working fluid comprises a fluorine-containing compound selected from the group consisting of perfluorocarbons, hydrofluoroethers, fluorinated hydrocarbons, and fluoroinerts.

23. The composition of Claim 22 wherein the fluorine-containing compound is  $(CF_3(CF_2)_n)_3N$ , where n is an integer from 4 to 20.

24. The composition of Claim 21 wherein the washing additive is selected from the group consisting of surfactants, enzymes, bleaches, ozone, ~~ultraviolet light~~, hydrophobic solvents, hydrophilic solvents, deodorizers, fragrances, antistatic agents, antistain agents, and mixtures thereof.

25. The composition of Claim 24 wherein the washing additive is individually mixed with the working fluid.

26. The composition of Claim 21 which further comprises a co-solvent added to the working fluid to form a mixture, wherein the co-solvent is selected from the group consisting of water, alcohols, ethers, glycols, esters, ketones, and aldehydes, and wherein the mixture is sufficiently stable for a fabric washing application.

27. The composition of Claim 25 further comprising agents to further effect a change in at least one physical parameter of the working fluid, wherein the at least one physical parameter is selected from the group consisting of pH, ionic strength, conductivity, or polarity.

28. The composition of Claim 21 wherein the working fluid is a liquid.

29. The composition of Claim 21 wherein the working fluid has a surface tension of less than or equal to 35 dynes/cm<sup>2</sup>.
30. The composition of Claim 21 wherein the working fluid has an oil solvency greater than water without being oleophilic.
31. The composition of Claim 30 wherein the KB is less than or equal to 30.
32. The composition of Claim 21 wherein the working fluid has a solubility in water of less than about 10%.
33. The composition of Claim 21 wherein the working fluid has a viscosity less than water under normal washing conditions.
34. The composition of Claim 21 wherein the working fluid has a pH from about 6.0 to about 8.0.
35. The composition of Claim 21 wherein the working fluid has a vapor pressure less than the vapor pressure of water.
36. The composition of Claim 21 wherein the working fluid has a flash point of greater than or equal to 145 °C.
37. The composition of Claim 21 wherein the working fluid is substantially non-reactive under washing conditions.
38. The composition of Claim 21 wherein the working fluid is substantially non-swelling to natural fabrics in the fabric load.
39. The composition of Claim 21 wherein the working fluid is hydrofluoroether.

40. A wash liquor composition for use in laundering a fabric load comprising:
- a) a non-reactive, non-aqueous, non-oleophilic, apolar working fluid, and
  - b) at least one non-aqueous washing additive.
41. The composition of Claim 40, wherein the working fluid comprises a fluorine-containing compound selected from the group consisting of perfluorocarbon, hydrofluoroether, fluorinated hydrocarbon, and fluoroinert.
42. The composition of Claim 41, wherein the fluorine-containing compound is  $(CF_3(CF_2)_n)_3N$ , where n is an integer from 4 to 20.
43. The composition of Claim 40, wherein the non-aqueous washing additive is selected from the group consisting of surfactant, enzyme, bleach, ozone, ~~ultraviolet light~~, hydrophobic solvent, hydrophilic solvent, deodorizer, fragrance, antistatic agent, antistain agent, and mixtures thereof.
44. The composition of Claim 43, wherein the washing additive is individually mixed with the working fluid.
45. The composition of Claim 40, which further comprises a co-solvent added to the working fluid to form a mixture, wherein the co-solvent is selected from the group consisting of water, alcohol, ether, glycol, ester, ketone, and aldehyde, and wherein the mixture is sufficiently stable for a fabric washing application.
46. The composition of Claim 45 further comprising agents to further effect a change in at least one physical parameter of the working fluid, wherein the at least one physical parameter is selected from the group consisting of pH, ionic strength, conductivity, or polarity.
47. The composition of Claim 40, wherein the working fluid is a liquid.
48. The composition of Claim 40,

- (c) wherein the working fluid has a surface tension of less than or equal to 35 dynes/cm<sup>2</sup>;
- (d) wherein the working fluid has an oil solvency greater than water without being oleophilic, and the KB is less than or equal to 30;
- (e) wherein the working fluid has a solubility in water of less than about 10%;
- (f) wherein the working fluid has a viscosity less than water under normal washing conditions;
- (g) wherein the working fluid has a pH from about 6.0 to about 8.0;
- (h) wherein the working fluid has a vapor pressure less than the vapor pressure of water; and
- (i) wherein the working fluid has a flash point of greater than or equal to 145 °C.

49. The composition of claim 48, wherein the working fluid is substantially non-reactive under washing conditions.

50. The composition of Claim 48, wherein the working fluid is substantially non-swelling to natural fabrics in the fabric load.

51. The composition of Claim 40, wherein the working fluid is hydrofluoroether.

52. The composition of claim 48, wherein the working fluid is hydrofluoroether.